# The West Strand peat story goes back over 8000 years

# Heritage Newsletter

Issue 9

## The West Strand Peat by Dr Peter Wilson

If, in these extraordinary times, your daily exercise routine takes you to the West Strand (aka Mill Strand) promenade, you will notice to the south of the Castle Erin promontory a layer of thick peat on the beach. The peat is particularly well exposed at present following the removal of sand from the beach by the winter storms, as shown below.

The Portrush peat as seen on Sunday 29th March 2020.

Some sand is removed from the beach each winter but during the past winter the amount seems to have been excessive, revealing large areas of thick, black peat. Close examination of the peat shows it to be very hard and dense (rather like the peat briquettes that you can buy) with numerous large fragments of tree trunks, branches and roots visible. On a low tide it is well worth taking a stroll on the beach to look at it – but please don't walk on it – it is rather slippery! Within the next couple of months, as sand is returned to the beach by waves, the peat will disappear from view until the storms of next winter expose it again.

The peat is an important material in several respects and hence its designation as an Area of Special Scientific Interest (ASSI) – as explained on the display panel on the adjacent promenade. Members of the Heritage Group who have seen the peat may have asked themselves: *What is it doing there?* and, *How old is it?*

Answers to these questions are available, but the detail is contained in papers in scientific journals that may not be immediately accessible to the interested layman. Therefore this piece aims to provide a brief overview of the origins and age of the peat, and it's a story that goes back over 8,000 years.

First, it might be useful to explain the conditions under which peat is created because these no longer prevail at Portrush. In situations where ground is waterlogged and oxygen is depleted (known as anaerobic conditions), vegetation is prevented from thorough decomposition when it dies. If these conditions persist, the dead vegetation will accumulate and over long periods can build up to a substantial thickness. Contained within peat is a record of the vegetation that grew at and around the site. Wood, stems, leaves, fruits and pollen may be extracted and identified, such is the degree of their preservation.

The first occasion on which the Portrush peat was mentioned in scientific literature was in 1879 when William Gray drew attention to its presence. Later William H. Patterson, writing in 1896, reported finding a cluster of flint flakes and cores within the peat, and in 1934 the Reverend L.M. Hewson claimed that worked flints were rare in the peat but more abundant in the covering sand layers. These investigations were carried out by antiquarians whose primary interest was in collecting and recording evidence for early human occupation along the coast, rather than with the peat itself.

In 1928 Gunnar Erdtman published his findings concerning the composition of the peat and gave details of the species of vegetation that had been growing at and adjacent to the site. In the lower part of the peat, pollen of birch, hazel and pine occurred, with some oak and elm. In the upper part of the peat, alder was the dominant tree species followed by hazel, birch, elm, oak and pine. This indicated that changes had occurred in the composition of the local vegetation during the course of peat development. A much more detailed investigation of the vegetation that contributed to the peat was undertaken by the Danish botanist Knud Jessen, as part of a wider study of Irish peat deposits. His visit to Ireland was prior to World War II but the results of his work were not published until 1949.

All these investigations were carried out at a time when the foreshore at Portrush looked somewhat different to how it looks today.

The West Strand, Portrush, 1910. Arrows indicate the peat at the base of the sand cliff.
(Taken from *Memories in Focus* volume 2, 1983, by T. McDonald and R. Anderson)

Above photograph shows the West Strand in, we think, 1910, some fifty years before the present promenade, lawns and car park were constructed. In the photo the peat (indicted by arrows) forms a small step at the bottom of the steep sand cliff. Jessen published a scaled drawing of the sand cliff showing the disposition of the peat in relation to the sand layers that occur underneath it and above it. In places a sand thickness of 11 metres covered the peat and this helps to explain why it resembles briquette peat – the overlying sand has greatly compressed it. Jessen's study also entailed examination of the pollen grains preserved within the peat and his results broadly concurred with the work undertaken by Erdtman. In addition he identified abundant remains of reeds and sedges. But he also went further than anyone had

done before and outlined the sequence of events that had led to peat accumulation and its eventual burial beneath a cover of sand.

It was noted that the peat was not a horizontal layer; rather it formed a series of gentle undulations when traced along the cliff. This was because it was draped over an undulating thickness of sand. Jessen noted that the sand was very fine, consisting of grains somewhat smaller than those in the sands that had buried the peat. He thought these lower sands represented dunes and that the peat had developed in depressions between the dunes due to anaerobic conditions. All this took place at a time when sea level was somewhat lower than it is today. The waterlogging within the dunes is likely to have been associated with the fact that sea level was gradually rising and preventing water between the dunes from draining away.

It was the rise in sea level that terminated the accumulation of the peat by depositing about 3 metres of beach sand and gravel on top of it. At that time, sea level may have reached 3-5 metres higher than it is today. Eventually sea level dropped back to roughly its present-day level and the winds worked on the beach sand and created tall dunes on top of it. Very little of this sequence is visible today, what we see is but a remnant of that earlier situation. We owe a debt of gratitude to Knud Jessen for his meticulous fieldwork and detailed recording of the character of the Portrush sand cliff. In recent years the peat has been located in excavations on either side of the railway embankment and is known to occur offshore as well, demonstrating that the peat on the beach is just a small part of a much more extensive deposit.

From the species of vegetation represented in the peat and the patterns of vegetation change that were emerging from peat studies across northwest Europe, both Erdtman and Jessen thought the Portrush peat had probably developed in Boreal to Atlantic times, that is sometime between approximately 10,500-6,800 years ago. At the time of their work the technique of radiocarbon dating organic materials like peat was not available and so the inferred Boreal-Atlantic age could not be confirmed. In the late-1980s re-culverting work on the stream that flows beneath part of Dhu Varren and then beneath the railway embankment and eventually to the beach, revealed the peat in a roadside excavation at the junction of Portstewart Road and Brooklyn Place. Samples of peat were taken for radiocarbon dating from the peat top and from as deep as the excavation allowed (it did not go deep enough to reach the bottom of the peat). The age obtained from the 'deep' sample was 7,960-8,340 years, but because this was not from the very bottom of the peat it only tells us that the peat began forming at some stage before this time; but just how long before is not yet known. The age from the top of the peat was 6,540-6,950 years and informs us that the peat was buried by sand at that time.

Another sample from the top of the peat exposed on the beach was collected for radiocarbon dating in 2009. This sample gave an age of 6,563-6,737 years. In statistical terms this age cannot be distinguished from the age obtained from the top of the peat in the excavation, so we can be confident that the peat was buried by sand deposited as a result of rising sea level sometime between 6,500 and 7,000 years ago. These radiocarbon dates confirm the age inferred by both Erdtman and Jessen, and together with their studies provide us with valuable insights into what this area of Portrush was like several thousands of years ago. You may see blocks of peat on the beach to the north of where Castle Erin once stood; these are blocks that have been eroded from the peat bed and moved along the beach by waves. These are usually removed by the Council.

Our thanks to Peter for this excellent contribution.

Portrush Heritage Group May 16th 2020